
Vol. 99 1990

CHROMOSOMA

Managing Editors

W. HENNIG, Nijmegen

P. MOENS, Downsview

Editors

F. AMALDI, Rome

R. APPELS, Canberra

D. P. BAZETT-JONES, Calgary

W. BEERMANN, Tübingen

A. BIRD, Wien

W. C. EARNSHAW, Baltimore

S. A. GERBI, Providence

I. GRUMMT, Würzburg

T. HASSOLD, Atlanta

C. HEYTING, Wageningen

P. HIETER, Baltimore

T. C. HSU, Houston

J. A. HUBERMAN, Buffalo

H. JÄCKLE, München

D. H. LEDBETTER, Houston

H. C. MACGREGOR, Leicester

L. MANUELIDIS, New Haven

D. E. OLINS, Oak Ridge

M. L. PARDUE, Cambridge, MA

J. B. RATTNER, Calgary

U. SCHEER, Würzburg

E. R. SCHMIDT, Mainz

D. SCHWEIZER, Wien

A. SPRADLING, Baltimore

H. STERN, La Jolla

J. H. TAYLOR, Tallahassee

M. F. TREDELENBURG, Heidelberg

H. F. WILLARD, Stanford

S. WOLFF, San Francisco

M. YANAGIDA, Kyoto

V. A. ZAKIAN, Seattle



Springer International

Chromosoma

Founded in 1939 as *Chromosoma, Zeitschrift für Zellkern- und Chromosomenforschung* by H. Bauer et al. Vols 1 and 2 were subtitled: *Abteilung B der Zeitschrift für Zellforschung und mikroskopische Anatomie*, Berlin, Springer. Vol. 3 without second subtitle, Wien, Springer 1947-1950. From Vol. 4 Berlin, Springer and from Vol. 4, No. 7, without any subtitle.

Copyright

Submission of a manuscript implies: that the work described has not been published before (except in the form of an abstract or as part of a published lecture, review, or thesis); that it is not under consideration for publication elsewhere; that its publication has been approved by all coauthors, if any, as well as by the responsible authorities at the institute where the work has been carried out; that, if and when the manuscript is accepted for publication, the authors agree to automatic transfer of the copyright to the publisher; and that the manuscript will not be published elsewhere in any language without the consent of the copyright holders.

All articles published in this journal are protected by copyright, which covers the exclusive rights to reproduce and distribute the article (e.g., as offprints), as well as all translation rights. No material published in this journal may be reproduced photographically or stored on micro-

film, in electronic data bases, video disks, etc., without first obtaining written permission from the publisher.

The use of general descriptive names, trade names, trademarks, etc., in this publication, even if not specifically identified, does not imply that these names are not protected by the relevant laws and regulations.

While the advice and information in this journal is believed to be true and accurate at the date of its going to press, neither the authors, the editors, nor the publisher can accept any legal responsibility for any errors or omissions that may be made. The publisher makes no warranty, express or implied, with respect to the material contained herein.

Special regulations for photocopies in the USA

Photocopies may be made for personal or in-house use beyond the limitations stipulated under Section 107 or 108 of U.S. Copyright Law, provided a fee is paid. This fee is US \$ 0.20 per page, or a minimum of US \$ 1.00 if an article contains fewer than five pages. All fees should be paid to the Copyright Clearance Center, Inc., 21 Congress Street, Salem, MA 01970, USA, stating the ISSN 0009-5915, the volume, and the first and last page numbers of each article copied. The copyright owner's consent does not include copying for general distribution, promotion, new works, or resale. In these cases, specific written permission must first be obtained from the publisher.

Printed in Germany by Universitätsdruckerei Stürtz AG, Würzburg © Springer-Verlag, Berlin Heidelberg 1990

Table of contents Volume 99

No. 1 pp 1-86 issued on 06.04.1990
No. 2 pp 87-160 issued on 17.05.1990
No. 3 pp 161-236 issued on 23.07.1990

Adolph S, Klett C, Weith A: Nonradioactive in situ nick translation combined with counterstaining: Characterization of C-band and silver positive regions in mouse testicular cells 251
Aghamohammadi SZ, Savage JRK: BrdU pulse/reverse staining protocols for investigating chromosome replication 76
Allsbrook WC → Hodge LD
Almeida CG de → Schmid M
Alonso C → Laran E
Amabis DC → Amabis JM
Amabis JM, Amabis DC, Kaburaki J, Stolar BD: The presence of an antigen reactive with a human autoantibody in *Trichosia pubescens* (Diptera: Sciaridae) and its association with certain transcriptionally active regions of the genome 102
Ascenzioni F → Guerrini AM
Aurias A → Zhang FR
Azzouz R → Lacroix J-C
Baker RJ → Hamilton MJ
Baker RJ → Meyne J
Barrett V → Fitch DHA
Bellini M → Lacroix J-C
Berger H → Matzke MA
Biddle FG → Wong AKC
Block K, Ising G, Ståhl F: Minichromosomes in *Drosophila melanogaster* derived from the transposing element *TE1* 336
Bloom K → Resnick MA
Bonaccorsi S, Gatti M, Pisano C, Lohe A: Transcription of a satellite DNA on two Y chromosome loops of *Drosophila melanogaster* 260
Borodin PM, Gorlov IP, Ladygina TY: Synapsis in single and double heterozygotes for partially overlapping inversions in chromosome 1 of the house mouse 365
Bottiroli G → Redi CA
Burma PK → Lakhota SC
Büsen W → Schlegel M
Charlemagne J → Lacroix J-C
Colin P → Schultz P
Cortés E → Díez JL
Davies A, Jenkins G, Rees H: Diploidisation of *Lotus corniculatus* L. (Fabaceae) by elimination of multivalents 289
Della Valle G → Guerrini AM
Della Valle G → Redi CA
Dell'Orto P → Redi CA
Díez JL, Cortés E, Merino Y, Santa-Cruz MC: Galactose-induced puffing changes in *Chironomus thummi* Balbiani rings and their dependence on protein synthesis 61
DiMario PJ, Gall JG: Nucleolin from the multiple nucleoli of amphibian oocyte nuclei 87
Donini P → Guerrini AM
Dournon C → Lacroix J-C
Drouin R, Lemieux N, Richer C-L: Analysis of DNA replication during S-phase

No. 4 pp 237-306 issued on 10.08.1990
No. 5 pp 307-378 issued on 21.09.1990
No. 6 pp 379-448 issued on 09.10.1990

by means of dynamic chromosome banding at high resolution 273
Duellman WE → Schmid M
Echeverria OM → Vazquez-Nin GH
Fakan S → Vazquez-Nin GH
Ferraro M → Prantera G
Fitch DHA, Strausbaugh LD, Barrett V: On the origins of tandemly repeated genes: Does histone gene copy number in *Drosophila* reflect chromosomal location? 118
Forejt J → Redi CA
Frasch M → Saumweber H
Friedl R → Schmid M
Gall JG → DiMario PJ
Garagna S → Redi CA
Gatti M → Bonaccorsi S
Ghosh AK, Mukherjee AS: Expression of 87A, 87C and 93D heat shock puffs in trisomic (2L and 3L) strains of *Drosophila melanogaster*: Evidence for a functional relation between 93D and 87C 71
Gorlov IP → Borodin PM
Gosálvez J, Sumner AT, López-Fernández C, Rossino R, Goyanes V, Mezzanotte R: Electron microscopy and biochemical analysis of mouse metaphase chromosomes after digestion with restriction endonucleases 36
Goyanes V → Gosálvez J
Greenbaum IF → Sudman PD
Griffiths R, Holland PWH: A novel avian W chromosome DNA repeat sequence in the lesser black-backed gull (*Larus fuscus*) 243
Grigliatti T → Hayashi S
Guerrini AM, Ascenzioni F, Pisani G, Rappazzo G, Della Valle G, Donini P: Cloning a fragment from the telomere of the long arm of human chromosome 9 in a YAC vector 138
Haaf T → Schmid M
Hamilton B → Jantsch M
Hamilton MJ, Honeycutt RL, Baker RJ: Intragenomic movement, sequence amplification and concerted evolution in satellite DNA in harvest mice, *Reithrodontomys*: Evidence from in situ hybridization 321
Hancock R → Pankov R
Hao S, Jiao M, Huang B: Chromosome organization revealed upon the decondensation of telophase chromosomes in *Alilium* 371
Hayashi S, Ruddell A, Sinclair D, Grigliatti T: Chromosomal structure is altered by mutations that suppress or enhance position effect variegation 391
Heilig R → Zhang FR
Hennig W → Lankenau D-H
Hershfield B, Swift H: Characterization of a tandemly repeated DNA from the fleshfly *Sarcophaga bullata* 125
Hillis DM → Schmid M

Hobart HH → Meyne J
Hodge LD, Martinez JE, Allsbrook WC, Pantazis CG, Welter DA: Intermediate structures in nuclear morphogenesis following metaphase from HeLaS₃ cells can be isolated and temporally grouped 169
Höger TH, Zatloukal K, Waizenegger I, Krohne G: Characterization of a second highly conserved B-type lamin present in cells previously thought to contain only a single B-type lamin 379
Holland PWH → Griffiths R
Honeycutt RL → Hamilton MJ
Hsu TC → Meyne J
Huang B → Hao S
Huet J → Schultz P
Huijser P → Lankenau D-H
Ikushima T: Bimodal induction of sister-chromatid exchanges by luminol, an inhibitor of poly(ADP-ribose) synthetase, during the S-phase of the cell cycle 360
Irie S → Ueda T
Ising G → Block K
Jansen E → Lankenau D-H
Jantsch M, Hamilton B, Mayr B, Schweizer D: Meiotic chromosome behaviour reflects levels of sequence divergence in *Sus scrofa domestica* satellite DNA 330
Jenkins G → Davies A
Jiao M → Hao S
Jimenez-Ruiz A → Laran E
Johnson KA, Sussex IM: Genomic amplification in the cotyledon parenchyma of common bean 223
Kaburaki J → Amabis JM
Kar Chowdhuri D → Lakhota SC
Kato Y → Ueda T
Kezer J → León P
Klett C → Adolph S
Korge G → Saumweber H
Krohne G → Höger TH
Künzel G → Schubert I
Lacroix J-C, Azzouz R, Simon F, Bellini M, Charlemagne J, Dournon C: Lampbrush W and Z heterochromosome characterization with a monoclonal antibody and heat-induced chromosomal markers in the new *Pleurodeles waltl*: W chromosome plays a role in female sex determination 307
Ladygina TY → Borodin PM
Lakhota SC, Kar Chowdhuri D, Burma PK: Mutations affecting β -alanine metabolism influence inducibility of the 93D puff by heat shock in *Drosophila melanogaster* 296
Lankenau D-H, Huijser P, Jansen E, Miedema K, Hennig W: DNA sequence comparison of microplasmid transposable elements from *Drosophila hydei* and *Drosophila melanogaster* 111
Laran E, Requena JM, Jimenez-Ruiz A, Lopez MC, Alonso C: The heat shock protein hsp70 binds in vivo to subregions 2-48BC and 3-58D of the polytene chromosomes of *Drosophila hydei* 315
Latos-Bielenska A, Vogel W: Frequency and distribution of chiasmata in Syrian hamster spermatocytes studied by the BrdU antibody technique 267
Lemieux N → Pankov R

- Lemieux N → Drouin R
 León P, Kezer J: Loop size in newt lampbrush chromosomes 83
 Leser G → Vazquez-Nin GH
 Lohe A → Bonaccorsi S
 Lopez MC → Laran E
 López-Fernández C → Gosálvez J
 Louys M → Schultz P
 Martin TE → Vazquez-Nin GH
 Martinez JE → Hodge LD
 Matzke AJM → Matzke MA
 Matzke MA, Varga F, Berger H, Schernthaner J, Schweizer D, Mayr B, Matzke AJM: A 41–42 bp tandemly repeated sequence isolated from nuclear envelopes of chicken erythrocytes is located predominantly on microchromosomes 131
 Maul GG, Yasuda Y: A nucleolar auto-antigen is part of a major chromosomal surface component 152
 Mayr B → Jantsch M
 Mayr B → Matzke MA
 Merino Y → Diez JL
 Meyne J, Baker RJ, Hobart HH, Hsu TC, Ryder OA, Ward OG, Wiley JE, Wurster-Hill DH, Yates TL, Moyzis RK: Distribution of non-telomeric sites of the (TTAGGG)_n telomeric sequence in vertebrate chromosomes 3
 Mezzanotte R → Gosálvez J
 Miedema K → Lankenau D-H
 Motzko D, Ruthmann A: Spindle membranes and calcium sequestration during meiosis of *Dysdercus intermedius* (Heteroptera) 212
 Moyzis RK → Meyne J
 Mukherjee AB, Parsa NZ: Determination of sex chromosomal constitution and chromosomal origin of drumsticks, drumstick-like structures, and other nuclear bodies in human blood cells at interphase by fluorescence in situ hybridization 432
 Mukherjee AS → Ghosh AK
 Muller S → Schlegel M
 Nagamachi CY → Souza Barros RM de Nobelis P → Schultz P
 Olins AL, Olins DE: Identification of 10 nm non-chromatin filaments in the macronucleus of *Euplotes eurystomus* 205
 Olins DE → Olins AL
 Oudet P → Schultz P
 Pankov R, Lemieux M, Hancock R: An antigen located in the kinetochore region in metaphase and on polar microtubule ends in the midbody region in anaphase, characterised using a monoclonal antibody 95
 Pantazis CG → Hodge LD
 Parsa NZ → Mukherjee AB
 Peverali FA → Redi CA
 Piczarka JC → Souza Barros RM de
 Pisani G → Guerrini AM
 Pisano C → Bonaccorsi S
 Prantera G, Ferraro M: Analysis of methylation and distribution of CpG sequences on human active and inactive X chromosomes by in situ nick translation 18
 Raimondi E → Redi CA
 Rappazzo G → Guerrini AM
 Rattner JB → Wong AKC
 Rattner JB → Wong AKC
 Rawlins DJ, Shaw PJ: Three-dimensional organization of ribosomal DNA in interphase nuclei of *Pisum sativum* by in situ hybridization and optical tomography 143
 Redi CA, Garagna S, DellaValle-G, Bottiroli G, Dell'Orto P, Viale G, Peverali FA, Raimondi E, Forejt J: Differences in the organization and chromosomal allocation of satellite DNA between the European long tailed house mice *Mus domesticus* and *Mus musculus* 11
 Rees H → Davies A
 Requena JM → Laran E
 Resnick MA, Westmoreland J, Bloom K: Heterogeneity and maintenance of centromere plasmid copy number in *Saccharomyces cerevisiae* 281
 Richer C-L → Drouin R
 Rossino R → Gosálvez J
 Ruddell A → Hayashi S
 Ruder F → Schlegel M
 Ruthmann A → Motzko D
 Ryder OA → Meyne J
 Sande JH van de → Wong AKC
 Santa-Cruz MC → Diez JL
 Santos JL: Differential meiotic behaviour of diploid and tetraploid cells in a partially asynaptic mutant 231
 Saumweber H, Frasch M, Korge G: Two puff-specific proteins bind within the 2.5 kb upstream region of the *Drosophila melanogaster* Sgs-4 gene 52
 Savage JRK → Aghamohammadi SZ
 Schernthaner J → Matzke MA
 Schlegel M, Muller S, Ruder F, Büsen W: Transcriptionally inactive micronuclei, macronuclear anlagen and transcriptionally active macronuclei differ in histone composition in the hypotrichous ciliate *Stylonychia lemnae* 401
 Schmid M, Steinlein C, Friedl R, Almeida CG de, Haaf T, Hillis DM, Duellman WE: Chromosome banding in Amphibia. XV. Two types of Y chromosomes and heterochromatin hypervariability in *Gastrotheca pseustes* (Anura, Hylidae) 413
 Schubert I, Künzel C: Position-dependent NOR activity in barley 352
 Schultz P, Nobelis P, Colin P, Louys M, Huet J, Sentenac A, Oudet P: Electron microscopic study of yeast RNA polymerase A: Analysis of single molecular images 196
 Schweizer D → Jantsch M
 Schweizer D → Matzke MA
 Sentenac A → Schultz P
 Shaw PJ → Rawlins DJ
 Simon F → Lacroix J-C
 Sinclair D → Hayashi S
 Souza Barros RM de, Nagamachi CY, Piczarka JC: Chromosomal evolution in *Callithrix emiliae* 440
 Steinemann M, Steinemann S: Evolutionary changes in the organization of the major LCP gene cluster during sex chromosomal differentiation in the sibling species *Drosophila persimilis*, *D. pseudoobscura* and *D. miranda* 424
 Steinemann S → Steinemann M
 Steinlein C → Schmid M
 Stollar BD → Amabis JM
 Strausbaugh LD → Fitch DHA
 Ståhl F → Block K
 Sudman PD, Greenbaum IF: Unequal crossing over and heterochromatin exchange in the X-Y bivalents of the deer mouse, *Peromyscus beatae* 183
 Summer AT → Gosálvez J
 Sussex IM → Johnson KA
 Swift H → Hershfield B
 Thomas G → Zhang FR
 Traut W, Willhoef U: A jumping sex determining factor in the fly *Megaselia scalaris* 407
 Traut W → Willhoef U
 Ueda T, Kato Y, Irie S: Regional differences in immunostainability of isolated metaphase chromosomes of Indian muntjac with anti-Z-DNA antibody 161
 Varga F → Matzke MA
 Vazquez-Nin GH, Echeverria OM, Fakan S, Leser G, Martin TE: Immunoelectron microscope localization of snRNPs in the polytene nucleus of salivary glands of *Chironomus thummi* 44
 Viale G → Redi CA
 Vogel W → Latos-Bielenska A
 Waizenegger I → Höger TH
 Ward OG → Meyne J
 Weith A → Adolph S
 Welter DA → Hodge LD
 Westmoreland J → Resnick MA
 Wiley JE → Meyne J
 Willhoef U, Traut W: Molecular differentiation of the homomorphic sex chromosomes in *Megaselia scalaris* (Diptera) detected by random DNA probes 237
 Willhoef U, Traut W
 Wong AKC, Biddle FG, Rattner JB: The chromosomal distribution of the major and minor satellite is not conserved in the genus *Mus* 190
 Wong AKC, Yee HA, Sande JH van de, Rattner JB: Distribution of CT-rich tracts is conserved in vertebrate chromosomes 344
 Wurster-Hill DH → Meyne J
 Yasuda Y → Maul GG
 Yates TL → Meyne J
 Yee HA → Wong AKC
 Zacharias H: Heteropycnosis of an under-replicating chromosome 24
 Zatloukal K → Höger TH
 Zhang FR, Heilig R, Thomas G, Aurias A: A one-step efficient and specific non-radioactive non-fluorescent method for in situ hybridization of banded chromosomes 436
- Acknowledgement to reviewers 448
 Chromosoma Prize 1
- Indexed in Current Contents

a-

n-
ae-
ac

n
on
the

n-
no-
de-

e
or
i

no-

er-

s A:
ra-
in
so-